

Green Power Switch® News

www.greenpowerswitch.com

WINTER 2012

In this Issue

Path to Solar

Wind in Your Back Yard

More Than Just a Pretty Place

Richardsville Elementary: Home of the First Net-Zero School in the Nation

Goodbye, Generation Partners and Hello, Green Power Providers!



TVA and local public power companies, working in cooperation with the environmental community, developed Green Power Switch as a way to bring green power — electricity that's generated by clean, renewable resources like solar, wind and methane gas — to Valley consumers. Green Power Switch is a TVA Renewable Energy Initiative.

This newsletter is printed on 100% post-consumer recycled paper.



A Letter From the Editor

"It still holds true that man is most uniquely human when he turns obstacles into opportunities." – Eric Hoffer (1902-1983)

Congratulations! Each of you is part of the most successful voluntary green energy program in the Southeast. This edition of Green Power Switch celebrates the many ways people in the Tennessee Valley help to add green energy to the local power grid, featuring wind energy as this season's renewable resource.

Green Power Switch is showcasing corporations, local businesses, municipalities, schools and concerned citizens just like you. Gatlinburg showcases an entire city of people choosing to live in harmony with the Great Smoky Mountains. Richardsville Elementary School demonstrates outstanding leadership in sustainability with some inspiring modifications. Path to Solar features your "average Joe" from Georgia and his solar story.

It's all about people who choose to seize opportunities that are environmentally friendly. People who are making a difference by adding premium green power to their energy consumption.

Again, congratulations! By supporting Green Power Switch, you are supporting a local green economy.

Thanks!

Jenny Wright



Jenny Wright in front of the TVA Buffalo Mountain windfarm.

Path to Solar

A Slow Start Ends with a Two-Year Payback!

By guest contributor Joe Kilpatrick, Georgia homeowner and Generation Partners participant

Solar energy was once thought to be an expensive hobby only available to the very wealthy, investors and enthusiasts. A lot has come together in recent years to make solar accessible to the everyday homeowner here in the Tennessee Valley. This article follows my path from the first spark of interest to owning a solar installation that generates enough electricity to cover around half my monthly bill.

SEPTEMBER 2009 – We made the decision

I worked with energy efficiency and renewable energy a lot during my 28-year career at TVA, and as a recent retiree I was ready to practice what I preached! I already participated in Green Power Switch, so the next logical step for me was to explore adding solar. I knew costs to install solar were coming down, so my goal was to see if I could afford an installation large enough to generate enough to cover around half of my electricity usage each month.

I found several installers who were willing to come out to my house to conduct site surveys. Some were very professional and some were not. One tried to charge me for a site survey, even though they didn't tell me about the charge prior to their visit! What really impressed me about the installer I selected was that they were not only knowledgeable about solar technology, but they also told me about programs and incentives available to help me finance the project. By October, they sent a bid estimate for a 4.1 kilowatt (kW) solar system. The total cost would be around \$32,427, or \$7.50 per watt; and, the 25-year warranty on the solar modules and 10-year warranty on the inverter really gave me peace of mind. The system was expected to generate roughly half of the electricity I use each month.

OCTOBER 2009 – We contacted our local power company

North Georgia Electric Membership Corporation (NGEMC) was helpful, positive



Joe and Simone Kilpatrick with their 4.1 kW solar panel.

and great to work with. Since the installation would be at my blueberry farm, they sent information on solar energy grants available from the U.S. Department of Agriculture (USDA). By the end of October, 2009, a USDA representative had visited the farm and helped me complete the paperwork. Once approved, this grant would provide 25-percent of the cost in one lump sum payment.

JANUARY 2010 – Chasing financing

My power company had approved my installation and I had selected a contractor, but my USDA grant wasn't awarded until June, 2010. Around that same time I was informed that the state of Georgia had already awarded all of the 2010 tax credits. When the state decided to revise their rules to allow tax credits for systems installed in the preceding year, I decided to move forward with the project. I could install my system in 2010 and get the tax credit in 2011.

AUGUST 2010 – Installation complete

The installation and all associated electrical work regarding the requirements of Generation Partners went off without a hitch! My new 4.1-kW solar system consists of twenty 205-watt solar modules installed on a fixed ground mount in my front yard.

SEPTEMBER 2010 – Still chasing financing

My federal tax credit was approved in September. By the end of 2010, I was informed by the Georgia Department of Revenue that I was pre-approved for part

of the tax credit, and in March of 2011, Georgia informed me that the balance of my 35-percent tax credit was approved.

TODAY – 2-year payback

My solar system has performed better than expected. It generates enough to earn me an average of \$95 each month, which NGEMC credits to my electric bill. This has dropped my monthly electricity expenses to as low as \$35 per month in months when my usage was low. At an average of \$95 per month, my out-of-pocket expenses for this installation will be recovered in a little under two years, after which my solar installation will continue to cut my electricity bills in half. Now that's an investment that no one can argue with!

Calculating the Incentive

The Database of State Incentives for Renewables and Efficiency (www.dsireusa.org) has up-to-date information about incentives or programs available in your area. These incentives change over time, so the information specific to this case study may have been updated in recent years.

Simple payback for Joe Kilpatrick's system:

Total cost (after taxes)		\$32,427
USDA grant = fixed 25%		-\$8,107
Federal tax = fixed 30%		-\$9,728
State tax cut = fixed 35%		-\$11,349
TVA incentive =		-\$1,000
Out-of-pocket expense		-\$2,243

GENERATION UPDATE January – July 2012



Solar Power
206,181 kWh



Wind Power
28,401,816 kWh



Biogas
11,871,330 kWh



Green Power Providers
Solar – 33,558,130 kWh
Wind – 7,936 kWh
Biogas – 33,186,305 kWh
Micro Hydro – 9,209 kWh



Program Sales to Date*
746,157 MWh

*Sales are reported through August 2012

To learn more about our generation sites and to find the one nearest you, please visit www.greenpowerswitch.com.

PARTICIPATION UPDATE AS OF AUGUST 2012

24,065 | Total number of green power blocks subscribed by residential customers

11,803 | Number of residential customers subscribing

13,104 | Total number of green power blocks subscribed by business customers

517 | Number of business customers subscribing

PILOTS UPDATE** AS OF AUGUST 2012

141 | Pure Solar customers

283 | Pure Solar blocks (50 kWh each)

2 | Southeastern RECs customers

20,334 | MWh sold through Southeastern RECs

**Pure Solar and Southeastern RECs are new Green Power Switch options that are being tested in certain areas during 2012. Pure Solar is 100 percent supplied by locally owned solar installations, sold in blocks of 50 kWh for \$8 each.

Southeastern RECs is a more affordable option for high-volume purchases. For a minimum purchase of \$6,000 annually, a customer can purchase 2,000 MWh of renewable electricity from a combination of local solar and additional sources within a broader portion of the Southeastern United States. These new customer options are currently being assessed to determine whether they will be continued in 2013.

See www.greenpowerswitch.com/puresolar and www.greenpowerswitch.com/serecs to learn more.

Wind in Your Back Yard

Wind energy, part of the renewable portfolio, is this issue's featured renewable.

We've all seen the storms in recent years in the TVA region on TV, and many of us have been personally impacted by them. We know the power of wind. It's easy to believe that once harnessed, wind power is capable of producing significant electrical energy.

So far this year, wind turbines installed in the Tennessee Valley have generated nearly 30,000 megawatt-hours of renewable energy – enough electricity to power 2,000 typical Southeastern homes for one year.¹ This is even more impressive when you consider that we began the century with no wind generation in the Valley at all.

Wind energy is not a new concept. Electricity from the wind has long been captured for commercial use. Wind turbines, like windmills, are mounted on towers and used to capture the power of atmospheric currents to generate electricity.

The difference between the older models of windmills, like those shown in the photograph bottom left, and modern turbines, like those installed on Buffalo Mountain in East Tennessee, is the much greater height and length of the blades. For instance, the newest turbines on Buffalo Mountain (installed in 2004) are 260 feet tall, with 135-foot blades. And compared to newer models, these turbines are quite small.

The concept is simple. When the wind blows, the propeller-like blades turn a rotor that generates electricity. Taller heights and longer blades increase the capacity for the turbine to capture wind and generate electricity.



Smaller turbines are available for interested homeowners and businesses, though. For grid-connected, homeowner-installed, small wind systems, electricity is still provided by the local power company, and when the wind is blowing the electricity generated by the turbine is added to the local grid.

In addition to the TVA windfarm, there are nearly 30 consumer-owned wind turbines generating in the region today, ranging from one to 25 kilowatts (kW). A 15- to 20-kW wind system should generate enough to completely meet the needs of the typical Southeastern home, but for many Green Power Provider participants, a smaller system serves to lower their electricity bills. A site inspection and a one-year study ensure the site has adequate wind speeds to support a turbine.

Some reports say that the wind in windy locations on or near land can power the world 6 to 15 times over.² Where does the wind blow sufficiently in the Tennessee Valley region? The U.S. Department of Energy's website, www.windpoweringamerica.gov, has maps and guidance for residential, community and utility-grade wind projects. We don't have as much wind availability as many parts of the nation, but with ever-improving technology, the possibility is out there.

The potential here is limitless. Old sailors say, "It's an ill wind that blows nobody good." As our region continues to increase its wind generation, we'll be saying, "It's a good wind that blows us electricity!" And it's coming soon to a windfarm near you.



Buffalo Mountain Windfarm

TVA's Buffalo Mountain windfarm sits on a ridge in northeast Tennessee. It was the first commercial windfarm in the Southeast. Over the past five years, the site has averaged roughly enough electricity to power over 3,200 homes annually.

¹ Source: U.S. Energy Information Administration: www.eia.gov/electricity/sales_revenue_price/index.cfm

² Scientific American,™ Oct. 26, 2009, "A Plan to Power 100 Percent of the Planet with Renewables," Mark Z. Jacobson and Mark A. Delucchi



More Than Just a Pretty Place

Oh, what a pretty place! Look at this view!

Over and over again visitors to Gatlinburg, the “Gateway to the Smoky Mountains” can be heard involuntarily uttering these words.

Who can blame them? The Great Smoky Mountains provide visitors to Gatlinburg and Sevier County with panoramic beauty when viewed from any direction. Sevier County is located next to the more than 500,000 acres of forests in Great Smoky Mountains National Park, one of the largest protected land areas east of the Rocky Mountains.

But those of you reading this article are likely wondering whether Gatlinburg’s sustainability efforts are “pretty is as pretty does.” Through actions including leadership participation in Green Power Switch and the Gatlinburg Goes Green Initiative, this region is indeed one of the greenest in the Tennessee Valley.

Earlier this year, Green Power Switch selected Sevier County Electric System to receive the “Transformer of the Year” award for the most business customers overall supporting renewable energy through a

purchase of Green Power Switch.

At the same Leadership Award ceremony, Patty West, director of TVA’s Renewable Energy Programs, presented Gatlinburg Chamber of Commerce with the 2011 “Community of the Year” award for their demonstrated leadership in sustainability. To see a complete list of award recipients as well as photos from the event, visit www.greenpowerswitch.com.

“We live in one of the most beautiful places in Tennessee and citizens of this community have a strong desire to protect our environment, promote renewable energy, and support a clean energy future. Green Power Switch is just one of the great options that helps them do that,” says Lucas Harkleroad, programs administrator for Sevier County Electric System.

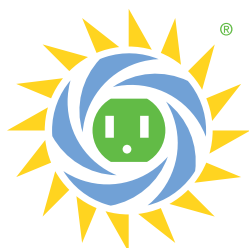
Both Sevier County Electric System and the Gatlinburg Chamber have taken strides to “green up” the community. The chamber’s commitment to sustainability took shape during a community-wide visioning process that identified responsibility to national

parks, sustainability and authenticity as values that were dear to Gatlinburg’s heart. The Gatlinburg Goes Green campaign was launched from this effort.

In addition to making the decision to support renewable energy with a purchase of Green Power Switch, the chamber also developed a plan to encourage businesses to reduce, recycle and repurpose; and, provided forward-thinking strategies for its members to reduce energy use and increase their support of renewable energy.

“This vision has become our driving force,” explains Vicki Simms, executive director of the Gatlinburg Chamber. “The future of Gatlinburg Goes Green is to continue to build on success and ensure that new businesses understand the scope of what can be done.”

Gatlinburg’s and Sevier County’s holistic approach to sustainable activities and education is setting the bar high for other communities, both in the Valley and across the country. For ideas about how your community and area business can go green, contact your local power company.



Green Power Switch Reflects TVA’s Commitment to Renewable Energy and Customer Choice

Green Power Switch (GPS) gives electric customers an opportunity to support a ‘block’ of renewable energy for a low \$4 a month.¹ These blocks represent 150 kilowatt-hours of electricity generated from renewable sources such as wind and solar.

Each \$4 purchase is backed by an independent third-party’s environmental certification. It’s a simple way for you to increase use of renewable energy today for a cleaner environment in the future.

¹ Assumes 175 W (DC) photovoltaic panels located in Nashville. Calculated using PV Watts v.2. The calculation for 2.8 kW (16 panels times 175W) yields an annual output of 3,577 kWh, or an average of 298 kWh/month. Based on average Tennessee Valley residential use of 1,205 kWh/ month. Source: <http://www.eia.gov/cneaf/electricity/esr/table5.html>

Richardsville Elementary: Home of the First Net-Zero School in the Nation

Richardsville Elementary School, located in Bowling Green, Kentucky and served by Warren Rural Electric Cooperative Corporation, operates without energy costs. Energy costs are typically a school district's second highest expenditure after personnel. Richardsville was one of half a dozen sustainability retrofits featured in *Parade Magazine's* August 2012 issue. This article on rebuilding America's schools affirms the years of effort Richardsville has made to reduce energy consumption and enhance the learning environment for young students.

"Saving energy is something we don't take lightly in our district," says Warren County Public Schools Superintendent Tim Murley. "Since 2003, our district has offset more than \$7 million in energy costs through our sustainability program; buildings like Richardsville seemed like the next progressive step. However, while saving energy dollars and placing those back in the classroom is a monumental achievement, it is not what makes Richardsville special. It has been an inspiration to see the students enthusiastically embrace these concepts and move forward with projects that we will see evidence of for generations. This is about passing forward a lifestyle change and a passion for energy conservation that is the ultimate reward to our community as a whole."

Reduced energy bills are certainly an important aspect of this project, but recent studies on schools that have incorporated passive solar features like daylighting into their buildings affirms Mr. Murley's beliefs. Studies conducted by EnergySmart Schools¹ have shown that these schools see improvements in student grades and attendance.

While reducing its carbon footprint, the school's sustainable traits are also ongoing, hands-on ecology projects for students. New building enhancements introduce students to geothermal and solar concepts, water conservation and recycling. Updates have also been made in the kitchen, out of sight to most school visitors and students. For instance, there is not a single fryer, oven or stove in the entire kitchen. Combi ovens, which use a customizable combination of steam and convection to prepare food, have allowed the school to dump one of their biggest



Approximately 2,700 solar panels were installed on the roof and parking structure for the 385 kilowatt solar array at Richardsville Elementary. The school is located in Bowling Green, Ky.

(and loudest) energy hogs – their kitchen hood.

As students see and touch these sustainability features, it sparks ideas for other teaching modules that are then integrated into other aspects of the student's learning experience. The Net Zero landing page, for example, features a student video worth visiting next time you're surfing the web, at warrencountyschools.org/school_NewsArticle.aspx?artID=489&schoolID=20.

The lessons these students learn as they monitor rainwater the school collects and utilizes, and the solar electricity generated by the solar panels on their roof, is serving to help educate generations to come on our role as stewards of the environment in which we live.

Net-Zero Features Employed at Richardsville Elementary School

- Light and Motion Detectors
- Outdoor Teaching Spaces
- Solar Tubes
- Clear Story Windows
- Curved Ceilings
- Geothermal Heating and Cooling
- Solar Panels
- Bamboo Gym Floors
- Soy-based Stained Concrete
- Weather Station
- Learning Centers in Hallways

Editor's Note: Growing the number of Valley installed systems is what a purchase of a \$4 block from Green Power Switch is all about. Warren Rural Electric Cooperative Corporation has been offering its customers the ability to sign up since 2007. Voluntary sign-ups demonstrate a consumer preference for premium power generated through TVA's sustainable renewable energy program known as Green Power Providers.

¹The U.S. Department of Energy's Building Technologies Program sponsors the EnergySmart Schools Program to reduce schools' energy use and to provide better learning environments for children.

Goodbye, Generation Partners and Hello, Green Power Providers!

It's official! TVA and participating local power companies have introduced the new, innovative and sustainable Green Power Providers program. Through innovative renewable energy programs like Green Power Switch and Green Power Providers, TVA and participating local power companies are putting TVA's vision of low-cost and cleaner energy into action.

Green Power Providers replaced the successful Generation Partners pilot program that was initiated in 2003. Like Generation Partners, the new program will continue to be a homegrown source of supply for Green Power Switch. Green Power Providers was designed to achieve sustainable success over the long-term. Some of its key features include:

Longer-term contracts

The contract term will now be 20 years in length. Participants will be paid the retail rate plus an incentive for a full 10 years of the 20-year contract term. For the remainder of the contract term, participants will be paid the retail rate.

A new fast-track process

Renewable energy projects up to 10 kW will be streamlined. Projects greater than 10 kW will require a review of the average

energy usage based on the customer's previous 12-month billing history.

Incentives aligned to renewable costs

The one-time participation incentive of \$1,000 will continue to be provided to offset installation costs. Incentive amounts will be reviewed annually to align with declining technology costs. For the remainder of 2012, the incentive payment will be 12 cents/kWh for solar and 3 cents/kWh for other eligible technologies.

Nationally certified installers

Beginning in 2013, new approved solar and wind projects must be installed by an individual who has received at least entry-level NABCEP certification.

Annual cap

An annual capacity cap will be established and displayed on the

program website, ensuring transparency and confidence that the program is adequately subscribed.

Continuity

Eligible resources (solar, wind, hydro and biomass), as well as resource size of up to 50 kilowatts, remain the same as under Generation Partners.

Clarity

A new Guidelines document is available on the TVA website. The Guidelines will provide details on program terms and conditions, premium information, eligibility criteria, etc.

We're excited about the transition to Green Power Partners. With the lessons learned in the pilot program, we have been able to create a program built for lasting success!

1101 Market St., MR 3M
Chattanooga, TN 37402-2881

TVA and your
local power company
Green Power Switch[®]



PRSR STD
U.S. Postage
PAID
Permit No. 220
Chattanooga, TN